

# Translation

PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

528,710  
PCT/EP2003/010570



Applicant's or agent's file reference 31177P WO	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/EP2003/010570	International filing date (day/month/year) 23 September 2003 (23.09.2003)	Priority date (day/month/year) 23 September 2002 (23.09.2002)
International Patent Classification (IPC) or national classification and IPC C12P 19/04		
Applicant DEGUSSA AG et al.		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
  - ☒ (sent to the applicant and to the International Bureau) a total of 4 sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
- This report contains indications relating to the following items:
  - ☒ Box No. I Basis of the report
  - ☐ Box No. II Priority
  - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - ☐ Box No. IV Lack of unity of invention
  - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - ☐ Box No. VI Certain documents cited
  - ☐ Box No. VII Certain defects in the international application
  - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 17 March 2004 (17.03.2004)	Date of completion of this report 20 April 2005 (20.04.2005)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/EP2003/010570

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is language of a translation furnished for the purpose of:

- ☐ international search (under Rules 12.3 and 23.1(b))  
☐ publication of the international application (under Rule 12.4)  
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

☒ The international application as originally filed/furnished

☒ the description:

pages \_\_\_\_\_ 1-19 \_\_\_\_\_, as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the claims:

pages \_\_\_\_\_, as originally filed/furnished

pages\* \_\_\_\_\_, as amended (together with any statement) under Article 19

pages\* \_\_\_\_\_ 1-24 \_\_\_\_\_ received by this Authority on \_\_\_\_\_ 18 January 2005 (18.01.2005)

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☒ the drawings:

pages \_\_\_\_\_ 1/2-2/2 \_\_\_\_\_, as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages \_\_\_\_\_

☐ the claims, Nos. \_\_\_\_\_

☐ the drawings, sheets/figs \_\_\_\_\_

☐ the sequence listing (*specify*): \_\_\_\_\_

☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.  
PCT/EP 03/10570

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	10	YES
	Claims	1-9, 11-24	NO
Inventive step (IS)	Claims		YES
	Claims	1-24	NO
Industrial applicability (IA)	Claims		YES
	Claims	1-24	NO

### 2. Citations and explanations

#### 1. Reference is made to the following documents:

- 1.1 D1: THALMANN CLAUDIA RITA ET AL: "Enzymatic cross-linking of proteins with tyrosinase" EUROPEAN FOOD RESEARCH AND TECHNOLOGY, Vol. 214, No. 4, April 2002 (2002-04), pages 276-281
- D2: FIGUEROA-ESPINOZA M C ET AL: "OXIDATIVE CROSS-LINKING OF PENTOSANS BY A FUNGAL LACCASE AND HORSERADISH PEROXIDASE: MECHANISM OF LINKAGE BETWEEN FERULOYLATED ARABINOXYLANS" CEREAL CHEMISTRY, AMERICAN ASSOCIATION OF CEREAL CHEMISTS. MINNEAPOLIS, US, Vol. 75, No. 2, 1 March 1998 (1998-03-01), pages 259-265
- D3: WO 98/22513 A (DALGETY PLC; FITCHETT COLIN STANLEY (GB)) (1998-05-28)
- D4: LABAT E ET AL: "Effect of laccase and manganese peroxidase on wheat gluten and pentosans during mixing" FOOD HYDROCOLLOIDS, Vol. 15, No. 1, January 2001 (2001-01), pages 47-52
- D5: US-B-6 232 1011 (HELDT-HANSEN HANS PETER ET AL) (2001-05-15)
- D6: US-A-5 998 176 (PEDERSEN LARS SAABY ET AL) (1999-12-07)

#### 1.2 D1 discloses a water-containing medium with

increased viscosity which contains a modified gellable polymer component with phenolic substituents (proteins) which brings about the modification by tyrosinase. The modification is carried out with or without caffeic acid.

D2 discloses a method for producing gel produced by the modification of arabinoxylan using the enzyme laccase (protein with tyrosinase activity).

D3 discloses hemicellulose (e.g. arabinoxylan and pectin) based gels produced using polyphenoloxidase enzymes.

D4 discloses a modified gellable polymer component with phenolic substituents (e.g. arabinoxylan) which brings about the modification by laccase (protein with tyrosinase activity) and manganese peroxidase.

D5 and D6 describe a method for increasing the viscosity of a medium using protein with tyrosinase activity, oxidases, hydrolases and/or peroxidases.

**2. Novelty, inventive step and industrial applicability (PCT Article 33)**

2.1 The present application relates to a modified gellable polymer component with phenolic substituents containing at least one polysaccharide (e.g. arabinoxylan and/or pectin). The modification is carried out by a protein having tyrosinase activity.

2.2 All of the technical features of claims 1-9, 11-23 are therefore known from publications D1-D6; the subject matter of claims 1-9 and 11-23 is therefore

not novel (PCT Article 33(2)). The present application does not therefore meet the requirements of PCT Article 33(1).

The applicant should be aware that the feature "gellable polymer component" does not bring about any restriction in the scope of protection of the claim. All of the documents cited in the search report show gellable polymers. Claims which attempt to define inventions by the result which is to be achieved cannot be accepted; this is particularly so when they indicate only the basic problem of interest (PCT Guidelines Chapter III, 4-7).

In addition, proteins with tyrosinase activity also includes proteins such as laccase.

2.3 The subject matter of claim 10 does not involve an inventive step (EPC Article 33(3)).

The advantage of the use of tyrosinase EC 1.14.18.1 is not clear at the present time. To substantiate an inventive step, the applicant should show an unexpected effect or property of the compounds as per the present application relative to compounds that are disclosed in the prior art as per D1 to D3.

2.4 Claims 1-23 satisfy the criterion of PCT Article 33(4) because their subject matter is industrially applicable.